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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,545	01/28/2000	Renwen Zhang	GI 5340A	2389

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EXAMINER
ROBINSON, HOPE A

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 01/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/493,545	Zhang et al.
Examiner	**Art Unit**
HOPE ROBINSON	1653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 25, 2002*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 3, 6-8, 10, 13, 14, 16, 17, and 19-21* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 3, 6-8, 10, 13, 14, 16, 17, and 19-21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's response to the Office Action mailed June 17, 2002, in Paper No. 20 on October 25, 2002 is acknowledged.

2. Claims 2, 4, 5, 9, 11, 12, 15 and 18 have been canceled. Claims 1, 6-8, 10, 13-14, 16-17 and 19-21 have been amended. Claims 1, 3, 6-8, 10, 13-14, 16-17 and 19-21 are pending.

3. The following grounds of rejection are or remain applicable :

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is indefinite because the claim recites " BMP-12 and members of the BMP-12 subfamily" in a Markush listing, and as it appears that BMP-12 may be a part of the BMP-12 subfamily (note that page 4 of the specification does not provide any detail regarding the BMP-12 family), this is double inclusion (see also claim 14).

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103 (a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103 (c) and potential 35 U.S.C. 102 (f) or (g) prior art under 35 U.S.C. 103 (a).

6. Claims 1, 3, 6-8, 10, 13-14, 16-17 and 19-21 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Hattersley et al. (U.S. Patent No. 5,700,774, December 23. 1997) in view of Pachence et al. (U.S. Patent No. 5,713,374, February 10, 1995).

The claimed invention is directed to a method and composition for regeneration of articular cartilage comprising administering an osteochondral graft applied to an amount of bone morphogenetic protein effective to cause bone regeneration. The specification on page 2 states that claimed invention provides methods and compositions for treatment of patients who suffer from some form of articular cartilage injury or defect. Hattersley teach a method and composition for repairing, reducing or preventing damage to cartilage and cartilaginous tissue comprising administering BMP-2 and one or more additional proteins, for example, BMP-4, 5, 7, 12 and 13 together with PTHrP (see columns 1-2 of the reference and claims 1 and 3 of the present application). Hattersley also teach that BMP (BMP-1 to BMP 15) play an important role as regulators of bone and other tissue repair processes, and is involved in tissue formation, maintenance and repair. Further, Hattersley states that BMP-2 has been shown to be able to induce the formation of new cartilage and or bone tissue in vivo in animal models.

In addition, Hattersley teach that the methods of the claimed invention comprises proteins that have the ability to induce formation of other types such as tendon and ligament (see columns 3-4 of the reference and claims 6, 7, 13 and 14 of the present application). Hattersley teaches that a heterodimer such as VGR-2, MP52, MIS for example can be combined with BMP-2 and BMP-12 or 13 (see column 7 and claim 7 of the present application. In-so-far-as Hattersley does

not teach osteochondral graft, Pachence teaches a method to repair articular cartilage/regeneration which utilizes transplantation of osteochondral grafts and chondrocytes (see columns 1 and 2).

Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the claimed invention as a whole by combining the teachings of Hattersley with Pachence because Hattersley teaches the repair/regeneration of articular cartilage by utilizing BMP with chondrocytes and Pachence teaches transplantation to repair articular cartilage utilizing osteochondral grafts. One of ordinary skill in the art would be motivated to combine the above references because Pachence teaches that osteochondral grafts or chondrocytes can be utilized for the articular cartilage repair/regeneration. Therefore, the claimed invention was within the ordinary skill in the art to make and use at the time it was made and was as a whole, *prima facie* obvious.

7. The response filed October 25, 2002 was sufficient to over come the rejections under 35 U.S.C. 102(b). Note that new grounds of rejections have been instituted based on the amendments to the claims. Thus, the claims remain rejection under 35 U.S.C. 103(a) and 112, second paragraph.

Regarding the rejection under 35 U.S.C. 112, second paragraph over claims 7 and 14, the claims were confusing with a markush listing of "BMP-12, BMP-13 members of the BMP-12

subfamily and MP52". As the claim has been amended to insert a comma to separate the phrase "BMP-13 and members of the BMP-12 subfamily", the claim is indefinite for having double inclusion.

With regard to the rejection under 35 U.S.C. 103(a), applicant's comments at pages 4-5 regarding the Hattersely and Nevo references was considered. Applicant's response contends that the combination of Hattersely with Nevo does not render the claimed invention as obvious because Nevo does not teach the use of osteochondral grafts in association with articular cartilage damage. Note that the rejection remains, however, the Nevo reference has been replaced now that the claims recite the limitation "osteochondral grafts".

Conclusion

8. Applicant's amendment necessitated the new/modified ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. No claims are presently allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hope Robinson whose telephone number is (703) 308-6231. The examiner can normally be reached on Monday and Wednesday-Friday from 9:00 am to 5:30 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher S.F. Low, can be reached at (703) 308-2923.

Any inquiries of a general nature relating to this application should be directed to the Group Receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted by facsimile transmission. The official fax phone number for Technology Center 1600 is (703) 308-4242. Please affix the examiner's name on a cover sheet attached to your communication should you choose to fax your response. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG (November 15, 1989).

Hope Robinson, MS

Patent Examiner

CHRISTOPHER S. F. LOW
SUPERVISORY PATENT EXAMINER
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